

10. MAY. 2001 15:51

WRAY AND ASSOCIATES

NO. 083

P. 4/28

PCTWORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : F04B 47/02, 53/14		A1	(11) International Publication Number: WO 00/28216
			(43) International Publication Date: 18 May 2000 (18.05.00)
(21) International Application Number: PCT/AU99/00992 (22) International Filing Date: 10 November 1999 (10.11.99) (30) Priority Data: PP 7013 10 November 1998 (10.11.98) AU PP 7390 27 November 1998 (27.11.98) AU (71) Applicant (for all designated States except US): SOLAR ENERGY SYSTEMS PTY. LTD. [AU/AU]; Unit 3, 81 Guthrie Street, Osborne Park, Perth, Western Australia 6017 (AU). (72) Inventor; and (75) Inventor/Applicant (for US only): WITTWER, Bruno [AU/AU]; 9 Newborough Street, Scarborough, Perth, Western Australia 6019 (AU). (74) Agent: SUDDABY, Mark; Wray & Associates, 239 Adelaide Terrace, Perth, Western Australia 6000 (AU).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published With international search report.	
(54) Title: PISTON PUMP			
(57) Abstract			
<p>A piston pump (10) for a liquid, comprising a piston (14) provided in a housing (16), comprising a piston body (18), a non-return valve (28) provided in the piston body (18), and a seal (32) provided between the piston body (18) and the housing (16), a drive shaft (44) operatively connected to the piston body (18) for reciprocal motion therewith, the drive shaft (44) being shaped and configured such that substantially equal volumes of liquid are displaced on initial and return strokes of the drive shaft (44). The drive shaft (44) is chosen to have a cross-sectional area equal to the cross-sectional area between the drive shaft (44) and the housing (16). The drive shaft (44) is hollow to provide buoyancy to the drive shaft (44), and is divided into chambers in case a leak develops.</p>			